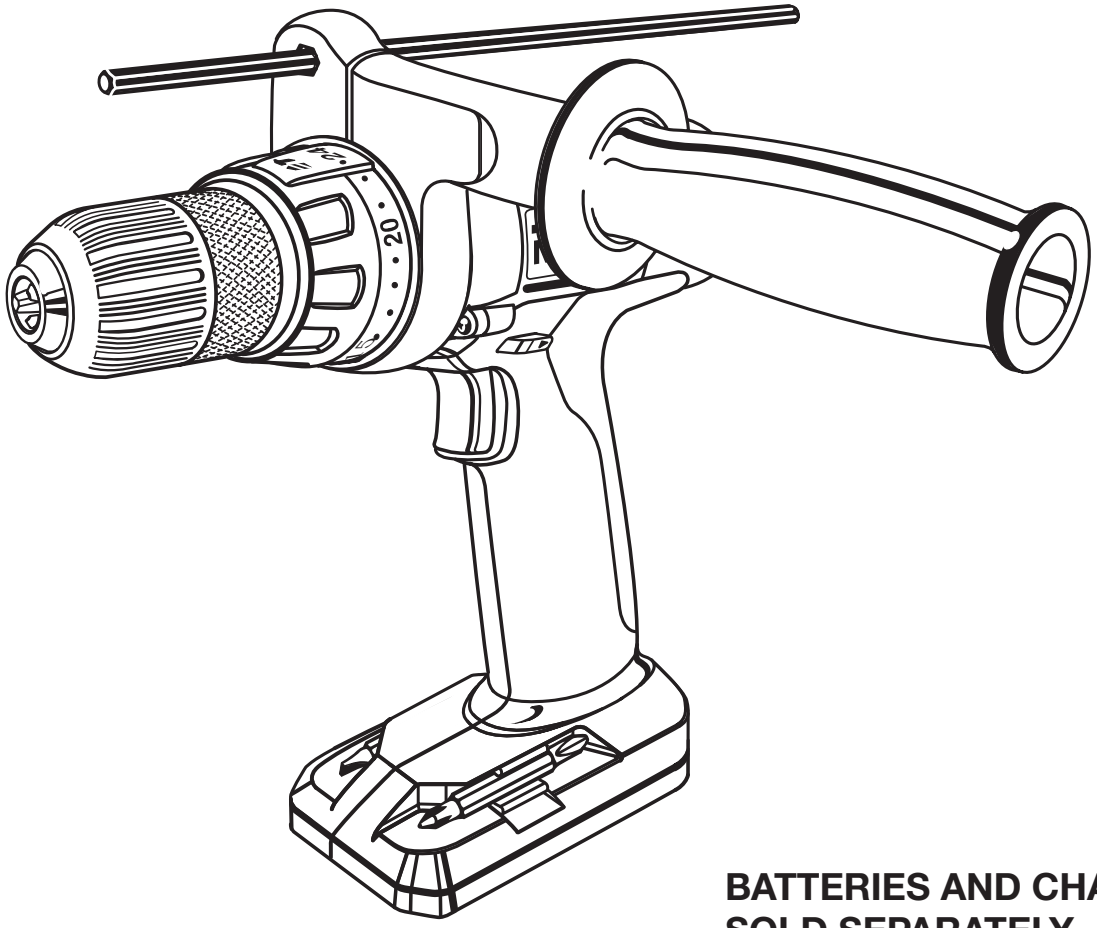
OPERATOR'S MANUAL

1/2 in., 18 VOLT

3-SPEED HAMMER DRILL

P220



BATTERIES AND CHARGERS SOLD SEPARATELY

Your hammer drill has been engineered and manufactured to Ryobi's high standard for dependability, ease of operation, and operator safety. When properly cared for, it will give you years of rugged, trouble-free performance.

WARNING: To reduce the risk of injury, the user must read and understand the operator's manual before using this product.

Thank you for buying a Ryobi product.

SAVE THIS MANUAL FOR FUTURE REFERENCE

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INTRODUCTION

This tool has many features for making its use more pleasant and enjoyable. Safety, performance, and dependability have been given top priority in the design of this product making it easy to maintain and operate.

WARRANTY

RYOBI® POWER TOOL - LIMITED TWO YEAR WARRANTY AND 30 DAY EXCHANGE POLICY

One World Technologies, Inc., warrants its RYOBI® power tools with the following conditions:

30-DAY EXCHANGE POLICY: During the first 30 days after date of purchase, you may either request service under this warranty or you may exchange any RYOBI® power tool which does not work properly due to defective workmanship or materials by returning the power tool to the dealer from which it was purchased. To receive a replacement power tool or requested warranty service, you must present proof of purchase and return all original equipment packaged with the original product. The replacement power tool will be covered by the limited warranty for the balance of the two year period from the date of the original purchase.

WHAT THIS WARRANTY COVERS: This warranty covers all defects in workmanship or materials in your RYOBI® power tool for a period of two years from the date of purchase. With the exception of batteries, power tool accessories are warranted for ninety (90) days. Batteries are warranted for two years.

HOW TO GET SERVICE: Just return the power tool, properly packaged and postage prepaid, to an Authorized Service Center. You can obtain the location of the Service Center nearest you by contacting a service representative at One World Technologies, Inc., P.O. Box 1207, Anderson, SC 29622-1207, by calling 1-800-525-2579 or by logging on to www.ryobitools.com. When you request warranty service, you must also present proof of purchase documentation, which includes the date of purchase (for example, a bill of sale). We will repair any faulty workmanship, and either repair or replace any defective part, at our option. We will do so without any charge to you. We will complete the work in a reasonable time, but, in any case, within ninety (90) days or less.

WHAT'S NOT COVERED: This warranty applies only to the original purchaser at retail and may not be transferred. This warranty only covers defects arising under normal usage and does not cover any malfunction, failure or defects resulting from misuse, abuse, neglect, alteration, modification or repairs by other than Authorized Service Centers. One World Technologies, Inc. makes no warranties, representations or promises as to the quality or performance of its power tools other than those specifically stated in this warranty.

ADDITIONAL LIMITATIONS: Any implied warranties granted under state law, including warranties of merchantability or fitness for a particular purpose, are limited to two years from the date of purchase. One World Technologies, Inc. is not responsible for direct, indirect, or incidental damages, so the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

GENERAL SAFETY RULES

⚠ WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

SAVE THESE INSTRUCTIONS

WORK AREA

- **Keep your work area clean and well lit.** Cluttered benches and dark areas invite accidents.
- **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust.** Power tools create sparks which may ignite the dust or fumes.
- **Keep bystanders, children, and visitors away while operating a power tool.** Distractions can cause you to lose control.

ELECTRICAL SAFETY

- **A battery operated tool with integral batteries or a separate battery pack must be recharged only with the specified charger for the battery.** A charger that may be suitable for one type of battery may create a risk of fire when used with another battery.
- **Use battery operated tool only with specifically designated battery pack.** Use of any other batteries may create a risk of fire.
- **Use battery only with charger listed.**

MODEL	BATTERY PACK (P100)	CHARGER (P110)
P220	130255004	1423701, 140237023 or 140237021

PERSONAL SAFETY

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use tool while tired or under the influence of drugs, alcohol, or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- **Dress properly. Do not wear loose clothing or jewelry. Contain long hair. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewelry, or long hair can be caught in moving parts.
- **Avoid accidental starting. Be sure switch is in the locked or off position before inserting battery pack.** Carrying tools with your finger on the switch or inserting the battery pack into a tool with the switch on invites accidents.
- **Remove adjusting keys or wrenches before turning the tool on.** A wrench or a key that is left attached to a rotating part of the tool may result in personal injury.
- **Do not overreach. Keep proper footing and balance at all times.** Proper footing and balance enable better control of the tool in unexpected situations.
- **Use safety equipment. Always wear eye protection.** Dust mask, non-skid safety shoes, hard hat, or hearing protection must be used for appropriate conditions.
- **Do not wear loose clothing or jewelry. Contain long hair.** Loose clothes, jewelry, or long hair can be drawn into air vents.
- **Do not use on a ladder or unstable support.** Stable footing on a solid surface enables better control of the tool in unexpected situations.

TOOL USE AND CARE

- **Use clamps or other practical way to secure and support the workpiece to a stable platform.** Holding the work by hand or against your body is unstable and may lead to loss of control.
- **Do not force tool. Use the correct tool for your application.** The correct tool will do the job better and safer at the rate for which it is designed.
- **Do not use tool if switch does not turn it on or off.** A tool that cannot be controlled with the switch is dangerous and must be repaired.
- **Disconnect battery pack from tool or place the switch in the locked or off position before making any adjustments, changing accessories, or storing the tool.** Such preventive safety measures reduce the risk of starting the tool accidentally.
- **Store idle tools out of reach of children and other untrained persons.** Tools are dangerous in the hands of untrained users.
- **When battery pack is not in use, keep it away from other metal objects like: paper clips, coins, keys, nails, screws, or other small metal objects that can make a connection from one terminal to another.** Shorting the battery terminals together may cause sparks, burns, or a fire.
- **Maintain tools with care. Keep cutting tools sharp and clean.** Properly maintained tools with sharp cutting edges are less likely to bind and are easier to control.
- **Check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the tool's operation. If damaged, have the tool serviced before using.** Many accidents are caused by poorly maintained tools.
- **Use only accessories that are recommended by the manufacturer for your model.** Accessories that may be suitable for one tool may create a risk of injury when used on another tool.
- **Keep the tool and its handle dry, clean and free from oil and grease.** Always use a clean cloth when cleaning. Never use brake fluids, gasoline, petroleum-based products, or any strong solvents to clean your tool. Following this rule will reduce the risk of loss of control and deterioration of the enclosure plastic.

GENERAL SAFETY RULES

SERVICE

- **Tool service must be performed only by qualified repair personnel.** Service or maintenance performed by unqualified personnel may result in a risk of injury.
- **When servicing a tool, use only identical replacement parts. Follow instructions in the Maintenance section of this manual.** Use of unauthorized parts or failure to follow Maintenance Instructions may create a risk of shock or injury.

SPECIFIC SAFETY RULES

- **Hold tool by insulated gripping surfaces when performing an operation where the cutting tool may contact hidden wiring.** Contact with a "live" wire will also make exposed metal parts of the tool "live" and shock the operator.
- **Know your power tool. Read operator's manual carefully. Learn its applications and limitations, as well as the specific potential hazards related to this tool.** Following this rule will reduce the risk of electric shock, fire, or serious injury.
- **Always wear safety glasses with side shields.** Everyday glasses have only impact resistant lenses. They are NOT safety glasses. Following this rule will reduce the risk of eye injury.
- **Protect your lungs. Wear a face or dust mask if the operation is dusty.** Following this rule will reduce the risk of serious personal injury.
- **Protect your hearing. Wear hearing protection during extended periods of operation.** Following this rule will reduce the risk of serious personal injury.
- **Battery tools do not have to be plugged into an electrical outlet; therefore, they are always in operating condition. Be aware of possible hazards when not using your battery tool or when changing accessories.** Following this rule will reduce the risk of electric shock, fire, or serious personal injury.
- **Do not place battery tools or their batteries near fire or heat.** This will reduce the risk of explosion and possibly injury.
- **Never use a battery that has been dropped or received a sharp blow.** A damaged battery is subject to explosion. Properly dispose of a dropped or damaged battery immediately.
- **Batteries vent hydrogen gas and can explode in the presence of a source of ignition, such as a pilot light.** To reduce the risk of serious personal injury, never use any cordless product in the presence of open flame. An exploded battery can propel debris and chemicals. If exposed, flush with water immediately.
- **Do not charge battery tool in a damp or wet location.** Following this rule will reduce the risk of electric shock.
- **For best results, your battery tool should be charged in a location where the temperature is more than 50°F but less than 100°F. Do not store outside or in vehicles.**
- **Under extreme usage or temperature conditions, battery leakage may occur. If liquid comes in contact with your skin, wash immediately with soap and water, then neutralize with lemon juice or vinegar. If liquid gets into your eyes, flush them with clean water for at least 10 minutes, then seek immediate medical attention.** Following this rule will reduce the risk of serious personal injury.

SAFETY RULES FOR CHARGER

⚠ WARNING!

READ AND UNDERSTAND ALL INSTRUCTIONS. Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

- **Before using battery charger,** read all instructions and cautionary markings in this manual, on battery charger, battery, and product using battery to prevent misuse of the products and possible injury or damage.

⚠ CAUTION:

To reduce the risk of electric shock or damage to the charger and battery, charge only nickel-cadmium rechargeable batteries as specifically designated on your charger. Other types of batteries may burst, causing personal injury or damage.

- **Do not use charger outdoors or expose to wet or damp conditions.** Water entering charger will increase the risk of electric shock.
- **Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.** Following this rule will reduce the risk of electric shock, fire, or serious personal injury.
- **Do not abuse cord or charger.** Never use the cord to carry the charger. Do not pull the charger cord rather than the plug when disconnecting from receptacle. Damage to the cord or charger could occur and create an electric shock hazard. Replace damaged cords immediately.
- **Make sure cord is located so that it will not be stepped on, tripped over, come in contact with sharp edges or moving parts or otherwise subjected to damage or stress.** This will reduce the risk of accidental falls, which could cause injury, and damage to the cord, which could result in electric shock.
- **Keep cord and charger from heat to prevent damage to housing or internal parts.**
- **Do not let gasoline, oils, petroleum-based products, etc. come in contact with plastic parts.** They contain chemicals that can damage, weaken, or destroy plastic.
- **An extension cord should not be used unless absolutely necessary.** Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure:
  a. That pins on plug of extension cord are the same number, size and shape as those of plug on charger.
  b. That extension cord is properly wired and in good electrical condition; and
  c. That wire size is large enough for AC ampere rating of charger as specified below:

Cord Length (Feet)	25'	50'	100'
Cord Size (AWG)	16	16	16

  NOTE: AWG = American Wire Gauge
- **Do not operate charger with a damaged cord or plug,** which could cause shorting and electric shock. If damaged, have the charger replaced by an authorized serviceman.
- **Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way.** Take it to an authorized serviceman for electrical check to determine if the charger is in good working order.
- **Do not disassemble charger.** Take it to an authorized serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- **Unplug charger from outlet before attempting any maintenance or cleaning to reduce the risk of electric shock.**
- **Disconnect charger from the power supply when not in use.** This will reduce the risk of electric shock or damage to the charger if metal items should fall into the opening. It also will help prevent damage to the charger during a power surge.
- **Risk of electric shock.** Do not touch uninsulated portion of output connector or uninsulated battery terminal.
- **Save these instructions.** Refer to them frequently and use them to instruct others who may use this tool. If you loan someone this tool, loan them these instructions also to prevent misuse of the product and possible injury.

IMPORTANT SAFETY INSTRUCTIONS

1. SAVE THESE INSTRUCTIONS

This manual contains important safety and operating instructions for battery charger 1423701, 140237023 or 140237021.

2. **Before using battery charger,** read all instructions and cautionary markings on battery charger, battery, and product using battery.
3. **CAUTION:** To reduce the risk of injury, charge only nickel-cadmium rechargeable batteries. Other types of batteries may burst, causing personal injury or damage.

SYMBOLS

Some of the following symbols may be used on this tool. Please study them and learn their meaning. Proper interpretation of these symbols will allow you to operate the tool better and safer.

SYMBOL	NAME	DESIGNATION/EXPLANATION
V	Volts	Voltage
A	Amperes	Current
Hz	Hertz	Frequency (cycles per second)
W	Watt	Power
min	Minutes	Time
~	Alternating Current	Type of current
⎓	Direct Current	Type or a characteristic of current
n_0	No Load Speed	Rotational speed, at no load
⧈	Class II Construction	Double-insulated construction
.../min	Per Minute	Revolutions, strokes, surface speed, orbits etc., per minute
	Wet Conditions Alert	Do not expose to rain or use in damp locations.
	Read The Operator's Manual	To reduce the risk of injury, user must read and understand operator's manual before using this product.
	Eye Protection	Always wear safety goggles or safety glasses with side shields and a full face shield when operating this product.
	Safety Alert	Precautions that involve your safety.
	No Hands Symbol	Failure to keep your hands away from the blade will result in serious personal injury.
	No Hands Symbol	Failure to keep your hands away from the blade will result in serious personal injury.
	No Hands Symbol	Failure to keep your hands away from the blade will result in serious personal injury.
	No Hands Symbol	Failure to keep your hands away from the blade will result in serious personal injury.
	Hot Surface	To reduce the risk of injury or damage, avoid contact with any hot surface.

SYMBOLS

The following signal words and meanings are intended to explain the levels of risk associated with this product.

SYMBOL	SIGNAL	MEANING
⚠	**DANGER:**	Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.
⚠	**WARNING:**	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
⚠	**CAUTION:**	Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.
	CAUTION:	(Without Safety Alert Symbol) Indicates a situation that may result in property damage.

SERVICE

Servicing requires extreme care and knowledge and should be performed only by a qualified service technician. For service we suggest you return the product to your nearest **AUTHORIZED SERVICE CENTER** for repair. When servicing, use only identical replacement parts.

⚠ WARNING:

To avoid serious personal injury, do not attempt to use this product until you read thoroughly and understand completely the operator's manual. Save this operator's manual and review frequently for continuing safe operation and instructing others who may use this product.

⚠ WARNING:

The operation of any power tool can result in foreign objects being thrown into your eyes, which can result in severe eye damage. Before beginning power tool operation, always wear safety goggles or safety glasses with side shields and a full face shield when needed. We recommend Wide Vision Safety Mask for use over eyeglasses or standard safety glasses with side shields. Always use eye protection which is marked to comply with ANSI Z87.1.

SAVE THESE INSTRUCTIONS

FEATURES

PRODUCT SPECIFICATIONS

Chuck	1/2 in.
Motor	18 Volt DC
Switch	Variable Speed
Gear Box	3-Speed
No Load Speed	Lo (0 - 370/min.), Hi (0-750/min.), Super-Hi (0 - 2200/min.)
Hammer Speed	Lo (0 - 5,920 BPM*), Hi (0-12,000 BPM*), Super Hi (0 - 35,200 BPM*)
Charger Input	120 V, 60 Hz, AC only
Charge Rate	1 Hour
Torque	Maximum 480 in.lb.

* Blows Per Minute

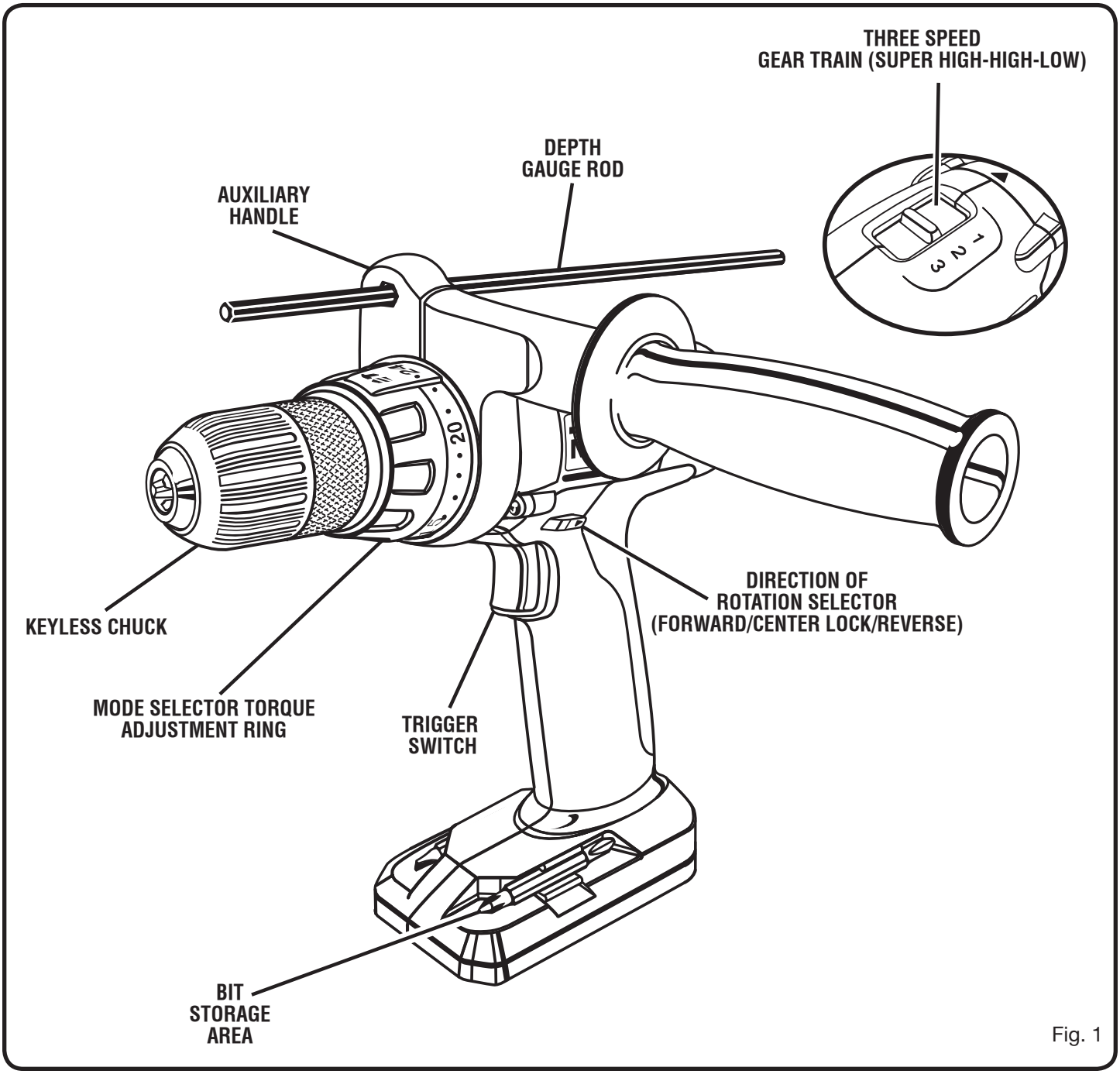

Fig. 1

FEATURES

KNOW YOUR HAMMER DRILL

See Figure 1.

Before attempting to use this product, familiarize yourself with all operating features and safety rules.

SWITCH

Your hammer drill has a conveniently located trigger switch.

THREE-SPEED GEAR TRAIN

This hammer drill has a three-speed gear train. A slide switch is located on top of the drill to select either **LOW (1), HIGH (2) or SUPER-HIGH (3)** speed.

REVERSIBLE

This hammer drill allows you to reverse the bit rotation. You can control the direction with the lever located on the top of the tool.

ADJUSTABLE TORQUE CLUTCH

The hammer drill is equipped with an adjustable torque clutch for driving different types of screws into different materials.

DEPTH GAUGE ROD

A depth gauge rod is installed on the auxiliary handle assembly to assist you in controlling the depth of drilled holes.

AUXILIARY HANDLE ASSEMBLY

An auxiliary handle is installed on the hammer drill. For ease of operation, you may use the handle with either the left hand or the right hand.

HAMMER MODE OPERATION

This tool features a hammer speed of 0-35,200 Blows Per Minute (BPM) in SUPER-HIGH (3) speed. Blows Per Minute is the number of impacts per minute when operating in Hammer Mode.

BIT STORAGE

When not in use, you can place the bits provided with your hammer drill in the storage area located on the bottom of the drill.

ERGONOMIC DESIGN

The design of the hammer drill provides for easy handling. It is designed for comfort and ease of grasp when operating in different positions and at different angles.

ASSEMBLY

UNPACKING

This product has been shipped completely assembled.

- Carefully remove the tool and any accessories from the box. Make sure that all items listed in the packing list are included.
- Inspect the tool carefully to make sure no breakage or damage occurred during shipping.
- Do not discard the packing material until you have carefully inspected and satisfactorily operated the tool.
- If any parts are damaged or missing, please call 1-800-525-2579 for assistance.

PACKING LIST

Hammer Drill with Auxiliary Handle Assembly

Double Ended Bits (2)

Lanyard (not included in Combo)

Operator's Manual

WARNING:

If any parts are missing do not operate this tool until the missing parts are replaced. Failure to do so could result in possible serious personal injury.

WARNING:

Do not attempt to modify this tool or create accessories not recommended for use with this tool. Any such alteration or modification is misuse and could result in a hazardous condition leading to possible serious personal injury.

WARNING:

To prevent accidental starting that could cause serious personal injury, always remove the battery pack from the tool when assembling parts.

OPERATION

WARNING:

Do not allow familiarity with tools to make you careless. Remember that a careless fraction of a second is sufficient to inflict serious injury.

WARNING:

Always wear safety goggles or safety glasses with side shields when operating tools. Failure to do so could result in objects being thrown into your eyes, resulting in possible serious injury.

WARNING:

Do not use any attachments or accessories not recommended by the manufacturer of this tool. The use of attachments or accessories not recommended can result in serious personal injury.

APPLICATIONS

You may use this tool for the following purposes:

- Hammer drilling in concrete, brick, or other masonry
- Drilling in wood
- Drilling in ceramics, plastics, fiberglass, and laminates
- Drilling in both soft and hard metals
- Driving screws with screwdriver bits, using driving accessories
- Mixing paint

CAUTION:

To prevent damage to the battery pack, remove the battery pack from the charger immediately if no LED comes on. Return the battery pack and charger to your nearest service center for checking or replacing. Also, if you are removing the battery pack from the charger and no LEDs are on, return both the battery pack and the charger to your nearest service center. Do not insert another battery pack into the charger. A damaged charger may damage a battery pack.

LED FUNCTIONS OF CHARGER

LED WILL BE ON TO INDICATE STATUS OF CHARGER AND BATTERY PACK:

- Red LED on = Fast charging mode.
- Green LED on = Fully charged and in maintenance charge mode.
- Green LED on = When battery pack is inserted into charger, indicates hot battery pack or that battery pack is out of normal temperature range.
- Yellow and Green LEDs on = Deeply discharged or defective battery pack.
- No LED on = Defective charger or battery pack.

OPERATION

CHARGING THE BATTERY PACK

Battery packs for this tool have been shipped in a low charge condition to prevent possible problems. Therefore, you should charge it until the green LED on the front of the charger comes on.

NOTE: Batteries will not reach full charge the first time they are charged. Allow several cycles (operation followed by recharging) for them to become fully charged.

CHARGING A COOL BATTERY PACK

If battery pack is within normal temperature range, the red LED on charger will come on.

NOTE: If the charger does not charge the battery pack under normal circumstances, return both the battery pack and charger to your nearest Ryobi Authorized Service Center for electrical check.

- Charge the battery pack only with a recommended charger.
- Make sure the power supply is normal household voltage, **120 volts, 60 Hz, AC only**.
- Connect the charger to the power supply.
- Place the battery pack in the charger aligning raised rib on the battery pack with the groove in the charger. *See Figure 3*.
- Press down on the battery pack to be sure contacts on the battery pack engage properly with contacts in the charger.
- Normally the red LED on charger will come on. This indicates the charger is in fast charging mode.
- Red LED should remain on for approximately 1 hour then the green LED will come on. Green LED on indicates battery pack is fully charged and charger is in maintenance charge mode.

  NOTE: The green LED will remain on until the battery pack is removed from the charger or charger is disconnected from the power supply.
- If both yellow and green LEDs come on, this indicates a deeply discharged or defective battery pack. Allow the battery pack to remain in the charger for 15 to 30 minutes. When the battery pack reaches normal voltage range, the red LED should come on. If the red LED does not come on after 30 minutes, this may indicate a defective battery pack and should be replaced.
- After normal usage, a minimum of 1 hour of charging time is required to fully recharge battery pack.
- The battery pack will become slightly warm to the touch while charging. This is normal and does not indicate a problem.
- Do not place the charger and battery pack in an area of extreme heat or cold. They will work best at normal room temperature.

  NOTE: The charger and battery pack should be placed in a location where the temperature is more than 50°F but less than 100°F.
- When batteries become fully charged, unplug the charger from power supply and remove the battery pack.

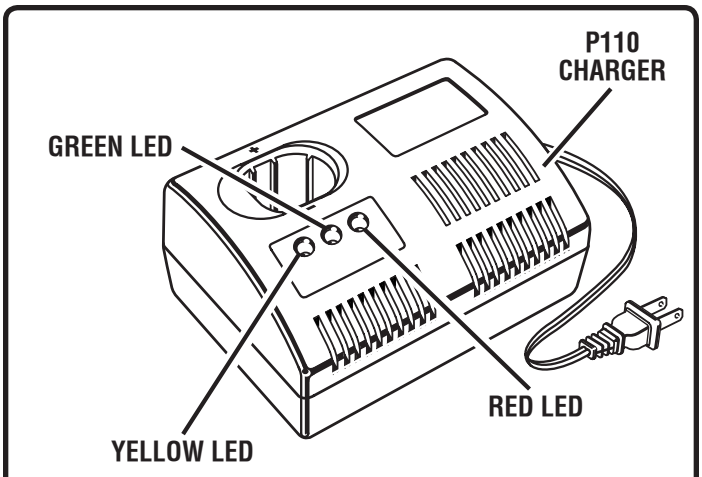

Fig. 2

BATTERY PACK SHOWN ATTACHED TO CHARGER

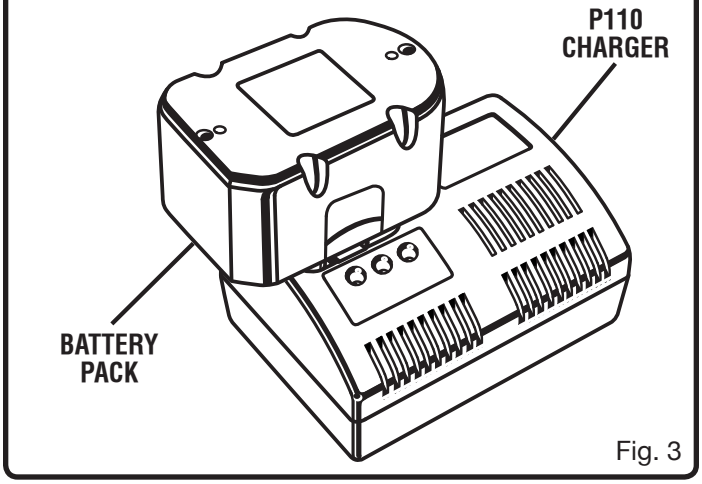

Fig. 3

OPERATION

CHARGING A HOT BATTERY PACK

When using the tool continuously, the batteries in the battery pack will become hot. You should let a hot battery pack cool down for approximately 30 minutes before attempting to recharge. When the battery pack becomes discharged and is hot, this will cause the green LED to come on instead of the red LED. After 30 minutes, reinsert the battery pack in the charger. If the green LED continues to remain on, return battery pack to your nearest Ryobi Authorized Service Center for checking or replacing.

NOTE: This situation only occurs when continuous use of the tool causes the batteries to become hot. It does not occur under normal circumstances. Refer to **"CHARGING A COOL BATTERY PACK"** for normal recharging of batteries. If the charger does not charge your battery pack under normal circumstances, return both the battery pack and charger to your nearest Ryobi Authorized Service Center for electrical check.

TO INSTALL BATTERY PACK

See Figure 4.

- Lock the trigger switch by placing the rotation selector in the center position.
- Place the battery pack on the tool.
- Make sure the latches on each side of the battery pack snap into place and the battery pack is secured on the tool before beginning operation.

CAUTION:

When placing battery pack in the tool, be sure raised rib on battery pack aligns with the bottom of the drill and latches into place properly. Improper installation of the battery pack can cause damage to internal components.

TO REMOVE BATTERY PACK

See Figure 4.

- Lock the trigger switch by placing the rotation selector in the center position.
- Depress the latches on the side of battery pack.
- Remove the battery pack from the tool.

SWITCH

See Figure 5.

- To turn the drill **ON**, depress the switch trigger.
- To turn the drill **OFF**, release the switch trigger.

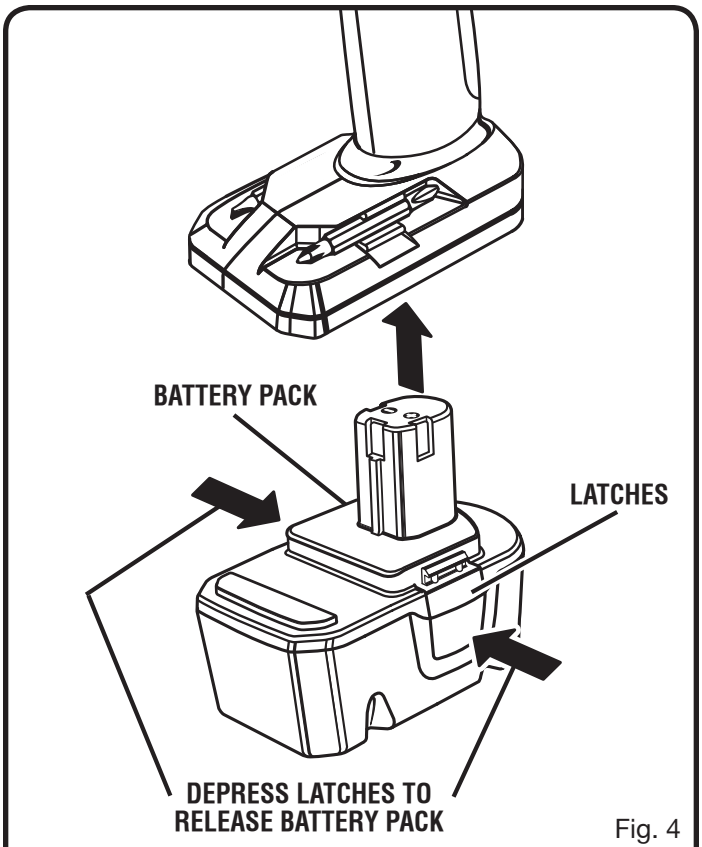

Fig. 4

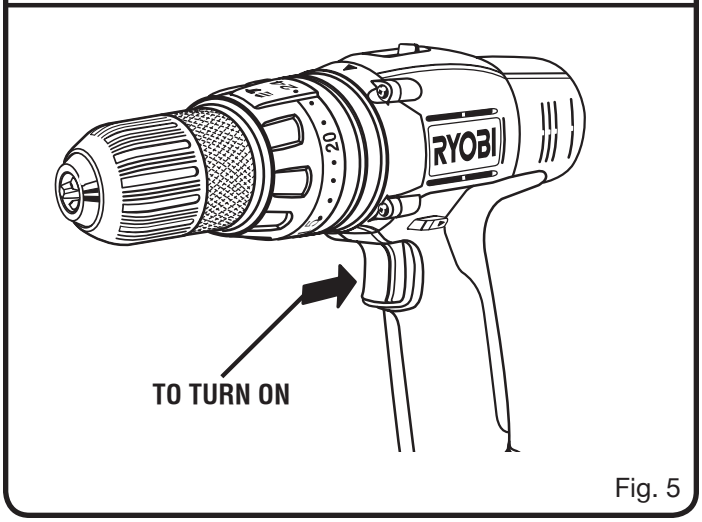

Fig. 5

OPERATION

INSERTING BITS

See Figure 6.

- Lock the trigger switch by placing the rotation selector in the center position.
- Position the chuck jaws so that the opening is slightly larger than the drill bit you intend to use.

  NOTE: To open the chuck jaws, turn the chuck sleeve counterclockwise. To close the chuck jaws, turn the chuck sleeve clockwise.
- Raise the front of the drill to keep the drill bit from falling out of the chuck jaws.

> **⚠ WARNING:**
> Do not insert a drill bit into the chuck jaws and tighten as shown in Figure 7. This could cause the drill bit to be thrown from the drill resulting possible serious injury or damage to the chuck.

- Insert the drill bit completely into the chuck.
- Tighten the chuck jaws securely on the drill bit. **Do not use a wrench to tighten or loosen the chuck jaws.**

REMOVING BITS

See Figure 6.

- Lock the trigger switch by placing the rotation selector in the center position.
- Loosen the chuck jaws.
- Remove the drill bit from the chuck jaws.

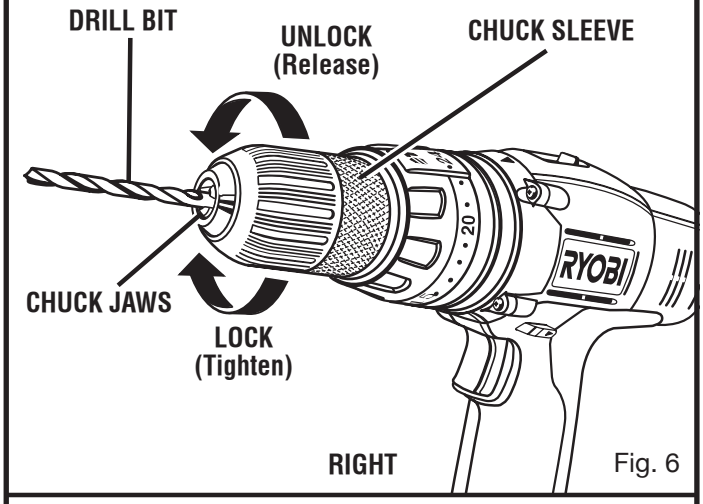

Fig. 6

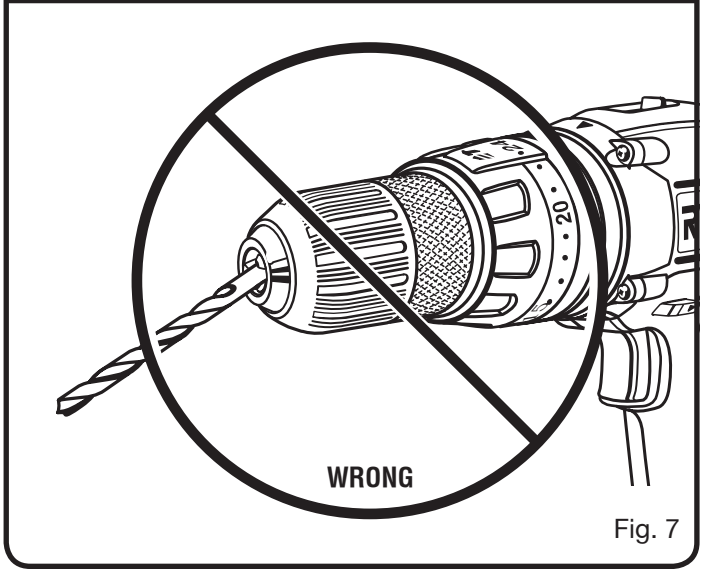

Fig. 7

OPERATION

⚠ WARNING:

The hammer drill should never be connected to a power supply when you are assembling parts, making adjustments, cleaning, performing maintenance, or when the tool is not in use. Disconnecting the tool will prevent accidental starting that could cause serious injury.

ADJUSTING THE AUXILIARY HANDLE ASSEMBLY

See Figure 8.

- Loosen the auxiliary handle assembly by turning the knob counterclockwise.
- Rotate the auxiliary handle assembly to the desired location.
- Tighten the auxiliary handle assembly securely by turning the knob clockwise.

ADJUSTING THE DEPTH GAUGE ROD

See Figure 9.

- Lock the trigger switch by placing the rotation selector in the center position.
- Loosen the auxiliary handle assembly by turning the knob counterclockwise.
- Adjust the depth gauge rod so that the drill bit extends beyond the end of the rod to the required drilling depth.
- Tighten the auxiliary handle assembly by turning the knob clockwise.

ADJUSTING THE SPEED

See Figure 10.

The hammer drill has a three-speed gear train that provides a super-high speed of approximately 2,200/min., a high speed of approximately 750/min. and a low speed of approximately 370/min. (stated speeds are no-load with the trigger switch in the "Full-on" position).

- *For super-high speed*: Slide the three-speed gear train switch to "3."
- *For high speed*: Slide the three-speed gear train switch to "2."
- *For low speed*: Slide the three-speed gear train switch to "1."

  NOTE: If you have difficulty changing from one gear range to the other, turn the chuck by hand until the gears engage.

CAUTION:

Never change gears while the tool is running. Failure to obey this caution could result in serious damage to the drill.

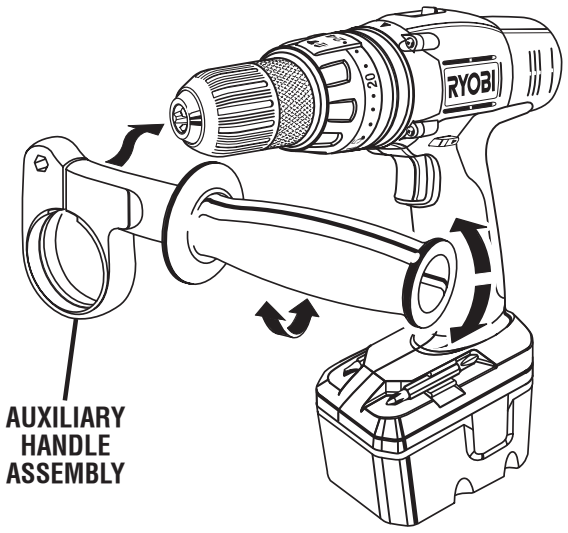

Fig. 8

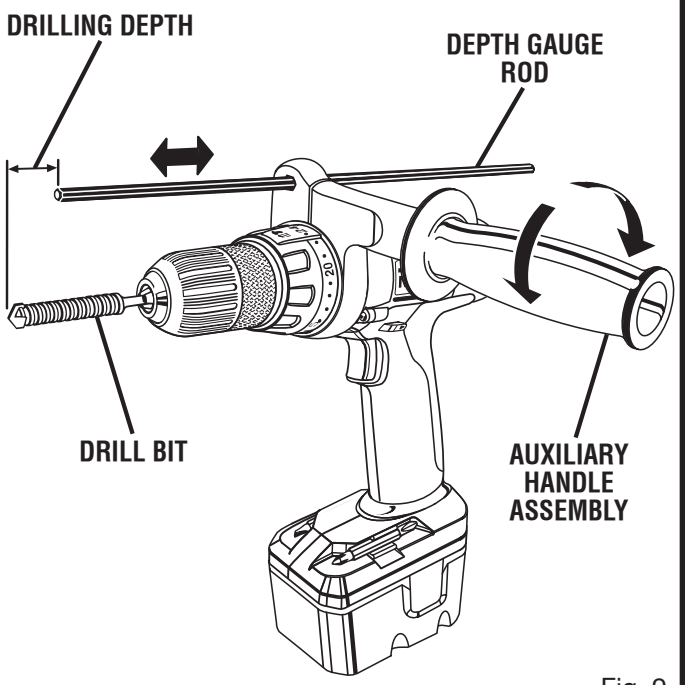

Fig. 9

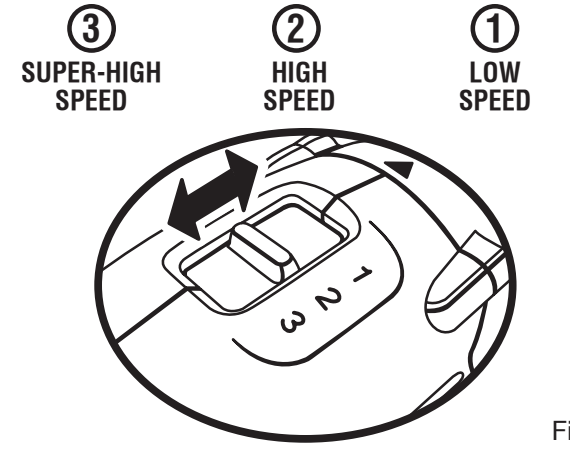

Fig. 10

OPERATION

ADJUSTING THE TORQUE

See Figure 11.

The hammer drill is equipped with an adjustable torque clutch for driving different types of screws into different materials. Adjust the torque as necessary. We recommend that you use carbide-tipped bits and select hammer mode when drilling in hard materials such as brick, tile, concrete, etc.

- Identify the torque indicator settings located on the front of the hammer drill.
- Rotate the adjusting ring to the desired setting.
  - 1 - 4 For driving small screws
  - 5 - 8 For driving screws into soft material
  - 9 - 12 For driving screws into soft and hard materials
  - 13 - 16 For driving screws in hard wood
  - 17 - 21 For driving large screws
  - For heavy drilling
  - For hammer drilling

CHANGING THE BIT ROTATION

See Figure 12.

The direction of the chuck is controlled by the rotation selector located above the trigger switch.

- *For forward rotation*: Move the rotation selector to the left.
- *For reverse rotation*: Move the rotation selector to the right.

  NOTE: The hammer drill will not run unless the selector is pushed fully to the left or right.

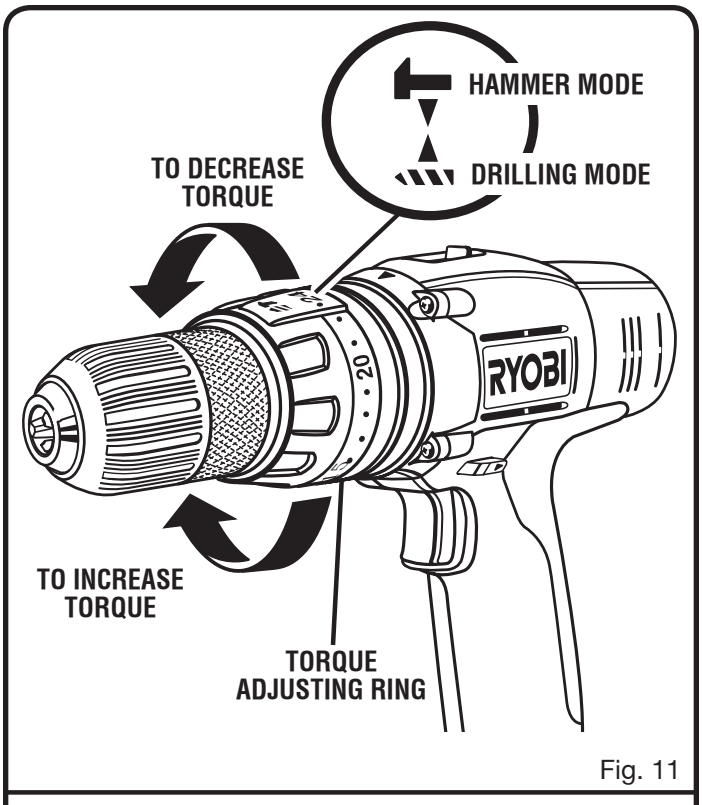

Fig. 11

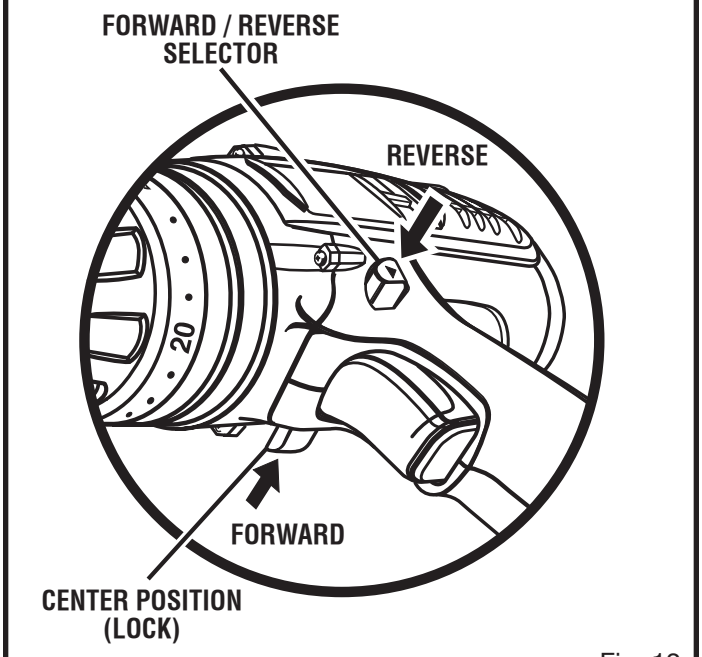

Fig. 12

OPERATION

DRILLING

See Figure 13.

Follow these steps to drill.

- Secure the material to be drilled in a vise or with clamps to keep it from turning as the drill bit rotates.
- Hold the tool firmly and place the bit at the point to be drilled.
- Depress the trigger switch to start the tool.
- Move the drill bit into the workpiece, applying only enough pressure to keep the bit cutting. Do not force or apply side pressure to elongate a hole.

> **⚠ WARNING:**
>
> Be prepared for binding at bit breakthrough. When these situations occur, the drill has a tendency to grab and kick in the opposite direction and could cause loss of control when breaking through material. If you are not prepared, this loss of control could result in possible serious injury.

HELPFUL TIPS

- When drilling hard, smooth surfaces, use a center punch to mark the desired hole location. This prevents the drill bit from slipping off center as you start the hole. You may, however, start holes without center punching if you use the lower speed. To accomplish this action, simply operate the drill at a lower speed until the hole is started.
- When drilling metals, use a light oil on the drill to keep it from overheating. The oil will prolong the life of the bit and increase the drilling action.
- If the bit jams in the workpiece or if the drill stalls, stop the tool immediately. Remove the bit from the workpiece and determine the reason for jamming.

> **⚠ WARNING:**
>
> Do not force the tool. Forcing the tool can result in jamming and loss of balance or footing, which could result in personal injury.

MAXIMUM RECOMMENDED CAPACITIES

	SPEED 1	SPEED 2	SPEED 3
Bits, Metal Drilling	1/2”	1/4”	1/4”
Wood, Flat Boring	1-1/2”	5/8”	3/8”
Bits, Masonry Drilling	-	1/4”	1/4”

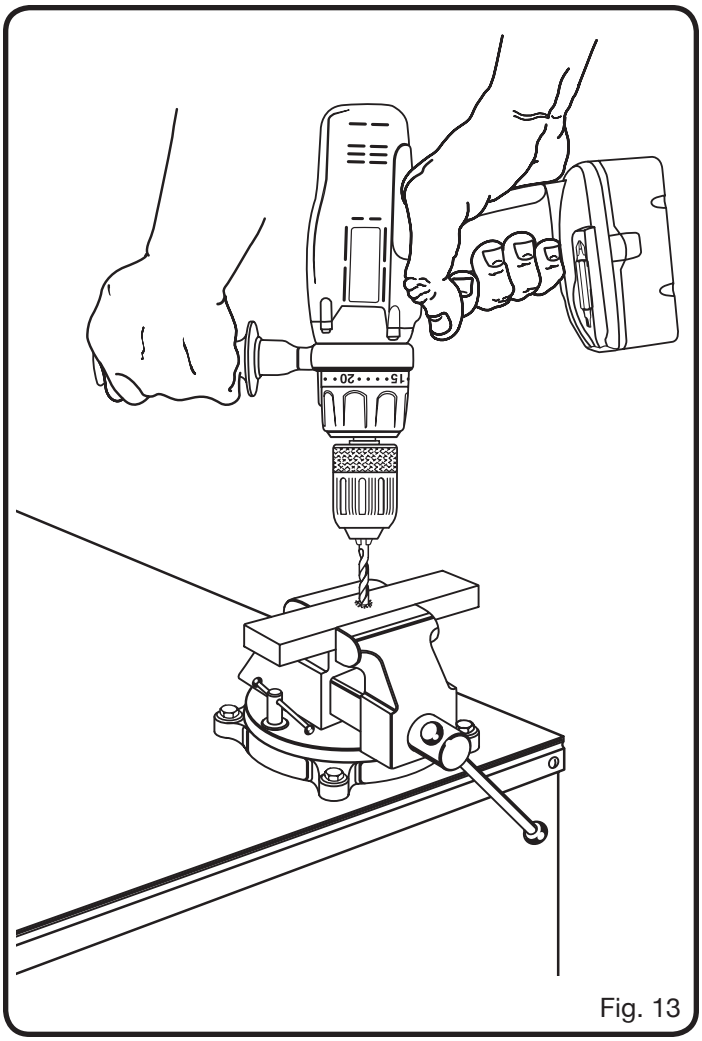

Fig. 13

MAINTENANCE

⚠ WARNING:
When servicing, use only identical Ryobi replacement parts. Use of any other parts may create a hazard or cause product damage.

⚠ WARNING:
Always wear safety goggles or safety glasses with side shields during power tool operation or when blowing dust. If operation is dusty, also wear a dust mask.

⚠ WARNING:
To avoid serious personal injury, always remove the battery pack from the tool when cleaning or performing any maintenance.

GENERAL MAINTENANCE

Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, dust, oil, grease, etc.

⚠ WARNING:
Do not at any time let brake fluids, gasoline, petroleum-based products, penetrating oils, etc., come in contact with plastic parts. Chemicals can damage, weaken or destroy plastic which may result in serious personal injury.

Only the parts shown on the parts list are intended to be repaired or replaced by the customer. All other parts should be replaced at a Ryobi Authorized Service Center.

REMOVING THE CHUCK

See Figures 14 - 16.

- Lock the trigger switch by placing the rotation selector in the center position.
- Insert a 5/16 inch or larger hex key wrench into the chuck of the drill and tighten the chuck jaws securely.
- Tap the hex key wrench sharply with a mallet in a clockwise direction. This will loosen the screw in the chuck for easy removal.
- Open the chuck jaws and remove the hex key wrench.
- Remove the chuck screw by turning it in a clockwise direction.

  NOTE: The screw has left-handed threads.
- Insert the hex key wrench in the chuck and tighten the chuck jaws securely.
- Tap sharply with a mallet in a counterclockwise direction. This will loosen chuck on the spindle. It can now be unscrewed by hand.

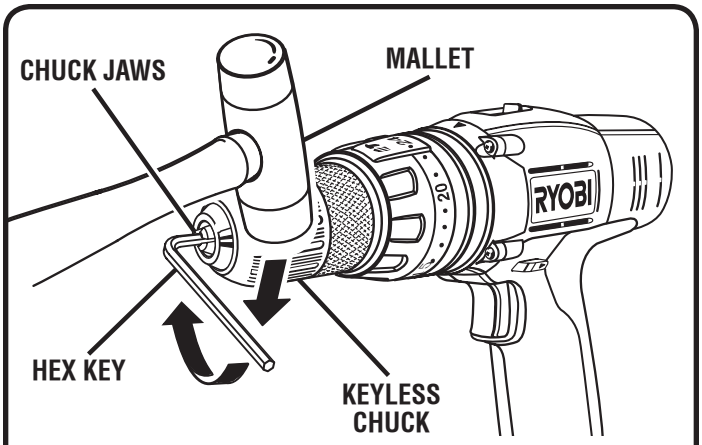

Fig. 14

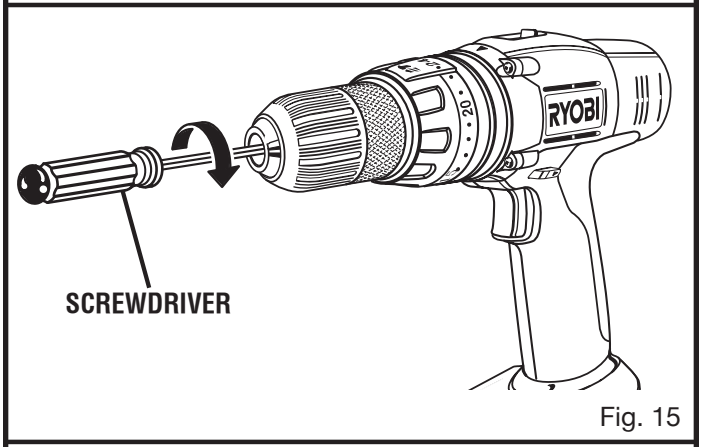

Fig. 15

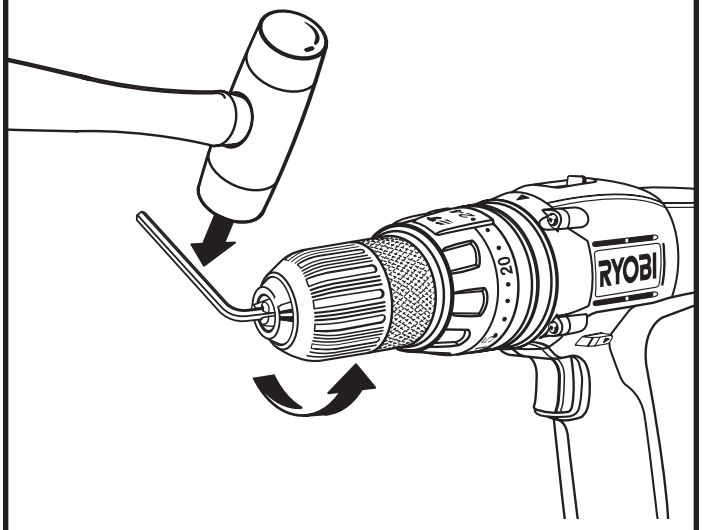

Fig. 16

MAINTENANCE

TIGHTENING THE CHUCK

See Figures 14 - 15.

The chuck may become loose on the spindle and begin to shake when using the drill. Also, the chuck screw may become loose causing the chuck jaws to bind and prevent them from closing.

- Lock the trigger switch by placing the rotation selector in center position.
- Open the chuck jaws.
- Insert the hex key wrench into the chuck and tighten the chuck jaws securely.
- Tap the hex key wrench sharply with a mallet in a clockwise direction. This will tighten chuck on the spindle.
- Open the chuck jaws and remove the hex key wrench.
- Tighten the chuck screw.

  NOTE: The chuck screw has left-handed threads.

BATTERIES

The battery pack for this tool is equipped with nickel-cadmium rechargeable batteries. Length of service from each charging will depend on the type of work you are doing.

The batteries in this tool have been designed to provide maximum trouble-free life. However, like all batteries, they will eventually wear out. **Do not** disassemble battery pack and attempt to replace the batteries. Handling of these batteries, especially when wearing rings and jewelry, could result in a serious burn.

To obtain the longest possible battery life, we suggest the following:

- Remove the battery pack from the charger once it is fully charged and ready for use.

For battery storage longer than 30 days:

- Store the battery pack where the temperature is below 80°F.
- Store battery packs in a "discharged" condition.

BATTERY PACK REMOVAL AND PREPARATION FOR RECYCLING

To preserve natural resources, please recycle or dispose of batteries properly.

This product contains nickel-cadmium batteries. Local, state or federal laws may prohibit disposal of nickel-cadmium batteries in ordinary trash.

Consult your local waste authority for information regarding available recycling and/or disposal options.

⚠ WARNING:

Upon removal, cover the battery pack's terminals with heavy-duty adhesive tape. Do not attempt to destroy or disassemble battery pack or remove any of its components. Nickel-cadmium batteries must be recycled or disposed of properly. Also, never touch both terminals with metal objects and/or body parts as short circuit may result. Keep away from children. Failure to comply with these warnings could result in fire and/or serious injury.

NOTES

OPERATOR'S MANUAL

1/2 in., 18 VOLT
3-SPEED HAMMER DRILL
P220

⚠ WARNING:

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- lead from lead-based paints,
- crystalline silica from bricks and cement and other masonry products, and
- arsenic and chromium from chemically-treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

• SERVICE

Now that you have purchased your product, should a need ever exist for repair parts or service, simply contact your nearest Authorized Service Center. Be sure to provide all pertinent facts when you call or visit. Please call 1-800-525-2579 for your nearest Authorized Service Center. You can also check our web site at www.ryobitools.com for a complete list of Authorized Service Centers.

• MODEL NO. AND SERIAL NO.

The model number of this product will be found on a plate attached to the motor housing. Please record the model number and serial number in the space provided below.

• HOW TO ORDER REPAIR PARTS

When ordering repair parts, always give the following information:

- MODEL NUMBER P220
- SERIAL NUMBER _____

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Phone 1-800-525-2579
www.ryobitools.com

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